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a plurality of video interfaces, each of said video interfaces independently reading one of the types of print data stored in a corresponding storage location of said image buffer; and

a plurality of image processing circuits, each of said image processing circuits applying an image process to the type of print data read by a corresponding one of said video interfaces.

BY
12. (ONCE AMENDED) A method of processing a plurality of types of print data according to an attribute of each type of print data, the attribute comprising one of a first kind of attribute and a second kind of attribute, the print data to be printed on one page, comprising:
storing each type of print data in a different storage location;
reading each one of the plural types of stored print data;
applying a different image process to each one of the read plural types of stored print data; and
outputting the processed print data on one page.

REMARKS

Claims 1-12 are pending in this application and have been rejected. Claims 1-3, 5-8, and 10-12 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Entry of Amendment Under 37 C.F.R. §1.116:

Applicants request entry of this Rule 116 Response because it is believed that the amendment of claims 1-3, 5-8, and 10-12 puts this application into condition for allowance. The amendments were not earlier presented because the Applicants believed in good faith that the cited prior art did not disclose the present invention as previously claimed.

The Manual of Patent Examining Procedures sets forth in Section 714.12 that "any amendment that would place the case either in condition for allowance or in better form for appeal may be entered." Moreover, Section 714.13 sets forth that "the Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent

Examining Procedures further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

REJECTION UNDER 35 U.S.C. §102:

The Examiner rejected claims 1-12 under 35 U.S.C. §102(e) as being anticipated by Kageyama et al. (U.S. Patent No. 5,774,638). Applicants respectfully traverse this rejection for the reasons presented below.

Claim 1 of the present invention, as amended, specifies that each type of print data has an attribute comprising one of a first kind of attribute and a second kind of attribute, and that each kind of print data is stored in a different storage location of an image buffer according to the attribute of that print data.

The printer of the present invention outputs a plurality of different types of print data on one page. The print data may include, for example, character codes, image dot data, printer setting data, commands, etc. Each of the types of print data has either a first attribute or a second attribute, such as form or text, image or text, or one of a plurality of bands. Each type of print data is stored in a separate storage location of an image buffer and, thus, the print data are stored according to the kind of attribute. Each of a plurality of video interfaces independently reads one of the types of print data in the image buffer. Accordingly, it is possible to apply specific processing to each type of print data read by a video interface. For example, a smoothing process may be applied to text data, while an intermediate tone process may be applied to image data.

The Examiner asserted on page 5 of the Office Action that Figures 1 and 20-26 of Kageyama disclose a memory having a plurality of storage areas according to attribute or type, and that Figures 20-23 and 26 disclose that information is divided into different types or regions having different attribute parameters. However, an "attribute" of the present invention differs from the "drawing attribute parameters" of Kageyama. In the present invention, an attribute is text, image, or form, for example, whereas in Kageyama, a drawing attribute parameter is character pitch, row pitch, italics, underline, etc. (Kageyama at col. 28, lines 57-59).

In the present invention, the print data are divided according to type of attribute. For example, the text data are separated from the image data. The divided data are then stored in separate locations in the image buffer. Kageyama does not disclose separating print data according to the type of attribute and storing each type of print data in separate buffer locations.

While Kageyama may disclose that a page is divided into a plurality of areas, Kageyama neither discloses how these areas are selected, nor that each area is selected according to attribute type. Thus, each area of Kageyama could contain more than one type of print data, making processing of the data, such as by application of the smoothing process, more difficult because more than one kind of attribute may be involved.

The Examiner also asserted that a shared memory "can have a plurality of areas as described in figure 26, which depicts how a page can contain different subcommands that represent different types of images as shown in figures 20-23." While a host computer in Kageyama may transmit a chain of subcommands for setting drawing attribute parameters, these commands appear in Figure 26 to be provided for each page, not for individual buffer areas. Kageyama does not disclose dividing the subcommands according to the type of data for which a subcommand is applicable.

In addition, the Examiner asserted that a master processor integrates different parts of the page by processing each part using a different processor. In Kageyama, drawing and printing processes are performed for each area of the page by a separate slave processor. Because each processor of Kageyama individually draws an area of the page, no integration occurs as specified by the present invention. In the present invention, the print data integration circuit combines the different types of print data that have been individually processed into one image signal for one page.

For example, if text print data are stored in one location of the image buffer and form print data are stored in another location of the image buffer, one video interface reads the text print data and a second video interface reads the form print data. Processing applicable to text data is performed on the text print data and processing applicable to form data is performed on the form print data. The print data integration circuit then combines the text print data with the form print data for printing.

Further, Figure 20 of Kageyama illustrates a matrix switch coupling scheme in which slave processors and partial page buffers are coupled by switches. Figure 21 illustrates an example of printed results. Figures 22 and 23 illustrate a page that has been divided into areas. Figures 24 and 25 illustrate how the master and slave processors contact one another. However, these figures do not describe dividing print data according to the attribute or type of data and storing the divided data in different locations of an image buffer.

Therefore, it is submitted that claim 1 patentably distinguishes over the prior art. Similar to claim 1, independent claims 6, 11, and 12 also specify that each type of print data has an

attribute comprising one of a first kind of attribute and a second kind of attribute, and that each kind of print data is stored in a different storage location of an image buffer. Thus, for at least the reasons presented above with respect to claim 1, it is submitted that independent claims 6, 11, and 12 patentably distinguish over the prior art.

As for the independent claims, the dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above.

Therefore, Applicants submit that claims 1-12 patentably distinguish over the prior art. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under §102.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding rejections, the application is submitted to be in condition for allowance, which action is earnestly solicited.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Finally, if there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Date: 8/14/01

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please **AMEND** the following claims:

1. (TWICE AMENDED) A printer outputting a plurality of types of print data corresponding to one or more images to be printed on one page, each of the types of print data having an attribute comprising one of a first kind of attribute and a second kind of attribute, said printer comprising:

an image buffer having a plurality of storage locations and storing each type of print data, one by one, in a different one of the storage locations according to [the attribute] one of the first kind of attribute and the second kind of attribute of each type of print data;

a plurality of video interfaces, each of said video interfaces independently reading one of the types of print data stored in a corresponding storage location of said image buffer;

a print data integration circuit integrating the plurality of types of print data read by said video interfaces to be printed on one page; and

an output mechanism outputting the integrated print data on one page.

2. (TWICE AMENDED) A printer according to Claim 1, wherein the plurality of types of print data stored in said image buffer contain form print data corresponding to a form as the first kind of attribute and text print data corresponding to a text, as the second kind of attribute, to be printed over the form.

3. (TWICE AMENDED) A printer according to Claim 1, further comprising:

a separation unit separating print data corresponding to an image with text into a type of print data corresponding to the image as the first kind of attribute and a type of print data corresponding to the text as the second kind of attribute; and

a storage unit storing each of the types of separated print data in said image buffer according to [the attribute] one of the first kind of attribute and the second kind of attribute of each type of separated print data.

5. (TWICE AMENDED) A printer according to Claim 1, wherein the plurality of types of print data stored in said image buffer are obtained by dividing print data, corresponding to the image to be printed on one page, into a plurality of bands, each of the bands corresponding to one of the first kind of attribute and the second kind of attribute, and wherein said print data integration circuit alternately selects the print data read by each of said video interfaces and outputs the selected print data to said output mechanism.

6. (TWICE AMENDED) A controller controlling a plurality of types of print data to be printed on one page, each of the types of print data having an attribute comprising one of a first kind of attribute and a second kind of attribute, said controller comprising:

a plurality of video interfaces, each of said video interfaces independently reading one of the types of print data stored in a corresponding one of a plurality of storage locations of an image buffer according to [the attribute] one of the first kind of attribute and the second kind of attribute of each type of print data; and

a print data integration circuit integrating the plurality of types of print data read by said video interfaces to be printed on one page.

7. (TWICE AMENDED) A controller according to Claim 6, wherein the plurality of types of print data stored in said image buffer contain form print data corresponding to a form as the first kind of attribute and text print data corresponding to a text as the second kind of attribute to be printed over the form.

8. (TWICE AMENDED) A controller according to Claim 6, further comprising:

a separation unit separating print data corresponding to an image with text into a type of print data corresponding to the image as the first kind of attribute and a type of print data corresponding to the text as the second kind of attribute; and

a storage unit storing each of the types of separated print data in said image buffer according to [the attribute] one of the first kind of attribute and the second kind of attribute of each type of separated print data.

10. (TWICE AMENDED) A controller according to Claim 6, wherein the plurality of types of print data stored in said image buffer are obtained by dividing print data, corresponding

to the image to be printed on one page, into a plurality of bands, each of the bands corresponding to one of the first kind of attribute and the second kind of attribute, and wherein said print data integration circuit alternately selects the print data read by each of said video interfaces and outputs the selected print data to said output mechanism.

11. (ONCE AMENDED) A printer processing a plurality of types of print data according to an attribute of each type of print data, the attribute comprising one of a first kind of attribute and a second kind of attribute and the print data to be printed on one page, comprising:

an image buffer storing each type of print data in a corresponding one of a plurality of storage locations of said image buffer;

a plurality of video interfaces, each of said video interfaces independently reading one of the types of print data stored in a corresponding storage location of said image buffer; and

a plurality of image processing circuits, each of said image processing circuits applying an image process to the type of print data read by a corresponding one of said video interfaces.

12. (ONCE AMENDED) A method of processing a plurality of types of print data according to an attribute of each type of print data, the attribute comprising one of a first kind of attribute and a second kind of attribute, the print data to be printed on one page, comprising:

storing each type of print data in a different storage location;

reading each one of the plural types of stored print data;

applying a different image process to each one of the read plural types of stored print data; and

outputting the processed print data on one page.